

source and uniformly illuminates the reticle R. Here, ArF laser is used as the exposure light source.

IN THE CLAIMS:

Please replace claims 1 and 17-20 as follows:

1. (Amended) A projection optical system which projects an image of a first surface onto a second surface, and which has a lens component formed of fluorite and a lens component formed of silica, comprising:

a first lens group including at least one lens component formed of fluorite and having a positive refractive power;

a second lens group which is arranged in an optical path between the first lens group and the second surface and which has a negative refractive power; and

a third lens group which is arranged in an optical path between the second lens group and the second surface and having a positive refractive power;

wherein when the number of the lens components formed of silica is S_{num} , the number of the lens components formed of fluorite is C_{num} , and a numerical aperture of the second surface side of the projection optical system is NA, the following conditions are satisfied:

$$S_{num} > C_{num}$$

$$NA > 0.75.$$

17. (Amended) A projection exposure apparatus which projects and exposes a reduced image of a pattern arranged in a mask onto a workpiece, comprising:

a light source having a center wavelength of 200 nm or less;

an illumination optical system which guides exposure light from the light source to the pattern on the mask; and

the projection optical system as set forth in claim 1;

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wherein the mask can be arranged at the first surface, and the workpiece can be arranged at the second surface.

18. (Amended) A projection exposure apparatus which projects and exposes a reduced image of a pattern arranged in a mask onto a workpiece, comprising:

a light source having a center wavelength of 200 nm or less;

an illumination optical system which guides exposure light from the light source to the pattern on the mask; and

the projection optical system as set forth in claim 2;

wherein the mask can be arranged at the first surface, and the workpiece can be arranged at the second surface.

19. (Amended) A projection exposure method which projects and exposes a reduced image of a pattern arranged in a mask onto a workpiece, comprising the steps of:

supplying exposure light having a center wavelength of 200 nm or less;

guiding the exposure light to the pattern on the mask; and

projecting an image of the pattern on the mask arranged at the first surface onto the workpiece arranged at the second surface by using the projection optical system as set forth in claim 1.

20. (Amended) A projection exposure method which projects and exposes a reduced image of a pattern arranged in a mask onto a workpiece, comprising the steps of:

supplying exposure light having a center wavelength of 200 nm or less;

guiding the exposure light to the pattern on the mask; and

projecting an image of the pattern on the mask arranged at the first surface onto the workpiece arranged at the second surface by using the projection optical system as set forth in claim 2.